Abilene Measurement

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JET Roadmap Workshop

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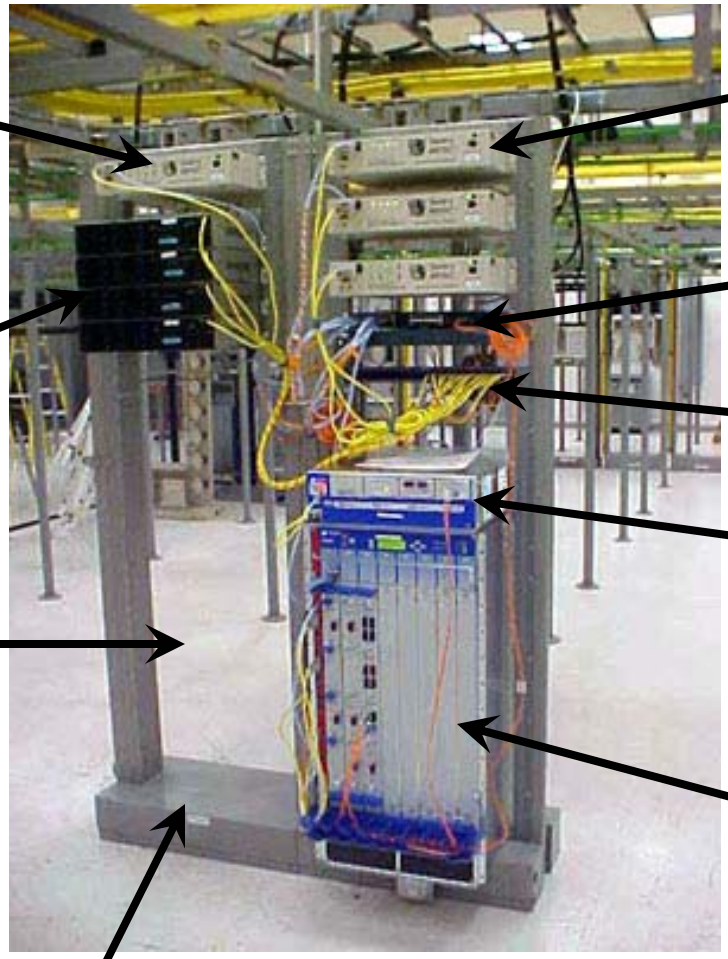
Observatory

- Publishing measurement data
  - Stuff we collect for operations
  - Stuff we collect for research
- The ability for research projects to add their equipment, or run software on our platform
  - Peer reviewed
  - Why? Passive, collocation makes analysis easier
  - AMP [1, going to 11], PMA [tbd], Planetlab

Abilene router node



Dedicated servers at each node

- nms1: throughput tester (iperf)
  - gigE direct to T-640, MTU 9000
- nms2: ad-hoc on-demand (+ ndt + routing)
  - gigE to switch to T-640, MTU 1500
- nms3: statistics collection (flow, snmp)
  - 100bT to switch to T-640
  - Local data collection to capture during network instability
- nms4: latency tester (owamp, troute)
  - 100bT to switch to T-640
  - CDMA “GPS” timing source from endruntechnologies.com

Hardware

- Intel SR2200 from ioncomputer.com
- Intel SCB2 motherboard
- Dual 1.26 GHz Pentium III, 512K L2
- 1GB PC-133 DRAM in two banks
- ServerWorks ServerSet HE-SL chipset
- 64 bit 64 MHz PCI
- Syskonnect GigE SK-9843 SX
- Redundant 48VDC

OS

- nms1 and 2
  - Linux 2.4.20, SMP, Web100 kernel as of last week
  - All traffic default routed through gigE
  - Buffers tuned a-la LBL document
  - 990 Mb/s TCP between any two nms1s
- nms3-4:
  - FreeBSD 4.6-STABLE
  - Buffers tuned

Measurement Capabilities

- One way latency, jitter, loss [owamp]
  - IPv4 and IPv6
- Regular TCP/UDP throughput tests – ~1 Gbps
  - IPv4 and IPv6; On-demand available [bwctl]
- SNMP (NOC) [octets, packets, errors; collected frequently]
  - NOC working on SNMP proxy
- "Netflow" (ITEC Ohio) [anon. by 0-ing last 11 bits]
- Multicast beacon with historical data
- Routing data (BGP & IGP) [IGP under development]
  - Looking at Zebra + mods, Japanese routing research is driver
- (Optical splitter taps on backbone links at select location(s))

Quality Control

- Single page to see ‘10 worst’ measurements
  - Throughput data
  - Losses
  - Variation in latency (95th – min) for links
  - Maybe top utilization measurements too for comparison
- Expect to iterate presentation to find “best” presentation for us

Adding other nodes: on demand

- New iperf test harness has provision for controlled on-demand testing
- Code: http://e2epi.internet2.edu/bwctl/
- Request access, give AES key to ami-key@internet2.edu
- Can also do owamp
  - http://e2epi.internet2.edu/owamp/
  - Key to ami-key@internet2.edu

“Visual Backbone”

- XML access of 1/hr snapshots
  - Lots of show commands
  - Show config
  - Show isis
  - Show bgp
  - Show interface
  - Multicast stuff
  - http://loadrunner.uits.iu.edu/~gcbrowni/Abilene/
- Router proxy: ask questions of router: safely, rate controlled

Other Monitoring

- AMP monitors being installed
  - Parallel experiments
- “Web services” access to data
  - MonaLisa can present the data
  - Other diagnostics can use data, eventually ask for tests

URLs

- http://abilene.internet2.edu/observatory
  - Pointers to all measurements/sites/projects
- http://www.abilene.iu.edu/
  - NOC home page. Weathermap, Router Proxy, SNMP measurements
- http://netflow.internet2.edu/weekly/
  - Summarized flow data
- http://www.itec.oar.net/abilene-netflow/
  - “Raw” – matricies; (Anon) feeds available on request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